The emergency department is a crucial point of access to the health care system for patients with the initial signs and symptoms of infectious disease, as well as for patients in need of emergent prophylaxis after occupational or crime-related blood and body fluid exposures. Emergency nurses frequently care for patients with vaccine-preventable infections across the lifespan. Examples of these vaccine-preventable diseases range from reactivation of varicella zoster (shingles) or *Streptococcus pneumonia* in the older adult, hepatitis B from an occupational exposure in a working-age adult, meningitis in the university student, to measles or chickenpox in young children. Owing to the overall success of vaccine programs and related infectious disease control and prevention measures, many emergency clinicians may have no individual experience with specific vaccine-preventable diseases in practice. Despite this widespread lack of personal clinical experience, we must remain prepared and vigilant for the signs and symptoms of vaccine-preventable infection presentations through frequent professional development and refresher educational content. When well prepared, the clinician can rapidly identify the rare, yet high-stakes, infectious disease case presentation to ensure that isolation precautions, diagnosis, or treatment are not delayed. For example, in my own emergency nursing practice I found that the distinct presentation of the pertussis cough was straightforward to identify early and initiate proper interventions, whereas the vague and prolonged presentation of mumps was subtle and easy to overlook, masquerading as a dental emergency. Environmental controls and isolation precautions to limit infection transmission have been the top priority of emergency departments across the globe this year in response to the coronavirus disease (COVID-19) pandemic. This editorial includes an Emergency Nurses Association infographic about the chain of infection in the Appendix. At the time of writing this editorial, severe acute respiratory syndrome coronavirus 2 vaccines are being tested in clinical trials, and it remains uncertain if the ED setting will have a crucial role in a mass vaccination campaign as part of the ongoing pandemic response. However, we do anticipate that the emergency nurse will have a crucial role in assessing and addressing pandemic-related delays in routine childhood vaccinations in pediatric emergency settings. In this timely context, the purpose of this editorial is to introduce a collection of infectious disease manuscripts published in this issue of the *Journal of Emergency Nursing (JEN)* and briefly introduce a framework of vaccine hesitancy relevant to emergency clinical practice.

**Infectious Disease Manuscripts in this Issue of JEN**

This is our final issue for 2020, a special year of celebration because both the International Council of Nurses and Nursing and the World Health Organization’s designated Year of the Nurse and Midwife coincides with the Emergency Nurses Association’s 50th Anniversary. In each 2020 issue, we have reprinted a *JEN* article from one of the Emergency Nurses Association’s 5 decades. With our recent experience with the second severe acute respiratory syndrome (SARS) pandemic, we reprint the timely “Responding to the Severe Acute Respiratory Syndrome (SARS) Outbreak: Lessons Learned in a Toronto Emergency Department” from the first global SARS pandemic in 2003. This *JEN* issue also includes 7 COVID-19–specific manuscripts. As the state of knowledge and evidence-based practice have been rapidly evolving in the pandemic, the manuscripts reflect updated knowledge at the time of submission. These manuscripts provide crucial evidence and practice application for both the ongoing pandemic response as well as reference material for future infectious disease prevention and response stages. Before community spread, Schwedhelm et al relay their continuous

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improvement updates on their facility’s triage symptom and travel management intervention to rapidly identify highly hazardous communicable diseases such as Middle East Respiratory Syndrome, SARS, and Ebola. The authors provide a noteworthy example to all emergency departments about the importance of maintaining infectious disease screening practices and quality improvement efforts between epidemics and pandemics as a proactive, and not just reactionary, strategy to protect ED personnel and other patients from pathogen exposure and cross-infection in the waiting and treatment areas.

Frontline clinicians in hospitals in Wuhan, China, where the COVID-19 pandemic response began, surveyed 297 health care workers about safety measures, training, and discomforts associated with personal protective equipment (PPE) donning, wearing, and doffing. The authors Xia et al7 relay their pragmatic lessons learned, with recommendations for staffing, limitations in direct patient care hours, PPE education, and measures to increase clinician comfort during PPE wear. COVID-19 clinical review and overview of the nursing care essentials are provided by Deitrick et al, whereas Hu et al4 enable an international perspective on the nursing care essentials for patients in isolation while suspected of, but not yet confirmed with, a severe acute respiratory syndrome coronavirus 2 infection. Still situated in time at the early pandemic response, Hou et al5 analyze the perceptions of pandemic preparedness among nurses in Taiyuan, Shanxi Province, China. The expressions of trust that the emergency nurses relayed in the hospital’s policy and operational response are striking, particularly when the reader contrasts the findings with the experiences of nurses in settings where the pandemic was a stressor that exacerbated pre-existing limitations in the PPE supply, highlighted a previous lack of investment in sufficient emergency nursing workforce numbers and training, or revealed misaligned incentives that fail to adequately prioritize the health and well-being of the nursing staff or patient over short-term financial profits. For the most critical patients with severe COVID-19, intensive care experts Tu et al9 publish their case reviews of patients treated with extracorporeal membrane oxygenation as a clinical reasoning resource to introduce, refresh, and deepen the emergency nursing knowledge of overall extracorporeal membrane oxygenation management. Furthermore, Dundin et al9 developed a program to improve palliative care in the emergency department as part of disaster preparations for a COVID-19 surge. Providing compassionate and dignified end-of-life care in the emergency department is a long-standing and patient-centered practice where the emergency care sector has demonstrated a clear need for specialty-wide improvement. Like many well-designed disaster preparedness programs, the actual disaster did not create the full need for the planned program as the authors had anticipated, but the program development process, template, and educational tools are included here in JEN as a resource for program replication and testing in other emergency departments, regardless of pandemic conditions. This issue of JEN also includes infectious disease–related manuscripts on topics of Ebola, HIV, rabies, and PPE, vaccine, antibiotic, antipyretic, and phlebotomy interventions.

Vaccine Hesitancy Framework

Vaccine hesitancy refers to an attitude of reluctance based on concerns, uncertainties, and doubts about vaccines that may lead to behaviors of delaying or declining to receive a vaccine, many vaccines, or all vaccines. For readers engaged in leadership on a national, state, or large organizational level, the World Health Organization’s Strategic Advisory Group of Experts on Immunization has developed The Guide to Tailoring Immunization Programs as a toolkit for vaccine program planning and development. Evidence evaluating the success of the toolkit’s implementation is evolving and ongoing. Although there is extensive evidence to validly measure and describe vaccine hesitancy, there is no strong evidence on any specific clinical or public health intervention to successfully enhance vaccine acceptance, overall. Nurse outreach and education, including home visits and education in partnership with pharmacists where the nurse administers the vaccine, demonstrate the strongest association with increased influenza vaccination rates in older adults. Alternatively, for children, a combination of education handouts, text messaging, and removing cost barriers have demonstrated initial efficacy to increase influenza vaccination rates in children. There are also published case studies in nurse-led programs, with evidence from key informants on the pragmatic lessons learned, to increase vaccination rates in the most recent United States measles outbreak. The colossal gap in the research literature on the efficacy of vaccine hesitancy interventions demonstrates the need and opportunity for rigorous emergency nursing science on the topic.

Most vaccine hesitancy interventions in the published literature focus on raising group/individual knowledge and awareness, but fail to address the valid concerns and negotiated care partnerships that many patients and families require to build trust and contextualize conflicting information. Although the evidence must be interpreted in light of the moderate research design quality, dialogue-based
interventions where the individual patient or group is able to express personal reasons for vaccine hesitancy and negotiate care or receive personalized education were most effective in addressing vaccine hesitancy.\textsuperscript{25,26} Nurses and other vaccine providers also report a perception that rapport and clinician-patient relationships are priorities in successfully overcoming vaccine hesitancy through nonjudgmental listening, personal examples, and individual counseling.\textsuperscript{20,27}

During the health history, health care record review, patient assessment, patient education, and counseling interventions of the emergency care encounter, the emergency nurse is in a key position to identify missed or delayed vaccines and vaccine hesitancy.\textsuperscript{1} Although these activities may not be the clinical priority in many emergent patient cases, vaccine-focused interventions can be lifesaving during patient encounters with pediatric, vaccine-preventable illness case contacts, or patients at high risk for morbidity and mortality from infectious disease. Given that the current evidence, although of poor to moderate quality in research design, indicates that nurse-led and dialogue-based patient-clinician relationship building are key to overcoming vaccine hesitancy, the vaccine hesitancy framework (Figure) is presented here to aid the emergency clinician in conceptualizing and assessing the root cause(s) of the patient’s or caregiver’s vaccine hesitancy.\textsuperscript{1,25,28-31}

The 3 levels of the vaccine hesitancy framework are vaccine, group/individual, and context. Various factors are underlined in the following discussion, and presented in the Figure. Eight vaccine-related factors that the emergency clinician can assess are listed in the bottom row of the Figure. On the basis of the route of administration, patients and families may have more hesitancy owing to fear and anxiety related to injection procedures. The emergency nurse can use best-evidence nonpharmacological interventions during all needle-related procedures to reduce procedural pain and anxiety, and potentially alleviate future vaccine hesitancy.\textsuperscript{32} The simple convenience of offering vaccines to nonurgent patients in the emergency department may overcome access, cost, or contextual geography barriers, but must be adequately resourced and staffed so as not to interfere with the clinical priority and flow of the department.\textsuperscript{16} Some parents may have concerns about the number of vaccines included in 1 injection, or desire personalized control over the temporal spacing of vaccines (recommended vaccine schedule).\textsuperscript{33} The expert emergency nurse can prepare to provide specific education and information in these instances on immune system function, differences in immune response by age group, and the mechanism of action by type of vaccine: live attenuated, inactivated, subunit, or toxoid. Finally, hesitancy based on the maturity of the vaccine or recency of

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<td>Maturity of vaccine/formulation</td>
<td>Access</td>
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the vaccine’s development, and on any changes in formulations or preservatives may be logical and can be met with a transparent discussion about risks and benefits to both the individual patient and the community at large. It is noteworthy that the characteristics of those who are vaccine-hesitant vary by region, and in many instances vaccine-hesitant parents can be highly educated. Although the reliability of the vaccine supply is rarely a major ongoing issue in high-income countries, we face great uncertainty about how this will affect vaccine hesitancy when and if a COVID-19 vaccine is available. The emergency nurse is in a vital role to not just provide one-way education to patients and families who are vaccine-hesitant, but to also actively and nonjudgmentally listen, counsel, and personalize precise and respectful strategies to overcome vaccine hesitancy.

Individual/group factors tend to be the most frequent and influential factors contributing to vaccine hesitancy, depicted in the second row of the Figure. Most interventions focus on working to increase knowledge and awareness about vaccines, vaccine schedules, and vaccine benefits. The emergency nurse can apply the vaccine hesitancy framework to practice as a way to fully assess the underlying factors that contribute to vaccine hesitancy in individual patients and families, and work to overcome these factors for improved vaccination rates. The emergency nurse is in a crucial role to build trust in the health care system and provider, and consider ways in which to both validate and mitigate instances where trust was broken between the group or individual and the health care system in the past. The emergency nurse may consider honestly acknowledging racial inequalities, profiteering, and past reasons for broken trust (eg, the role of prescriptions in the opioid crisis) in the health care system as a truth and reconciliation effort to rebuild healing and trust, while sharing clear and concise information about vaccine risks and benefits. Supporting a culture that normalizes vaccination, while individualizing vaccine assessment, teaching, and care to the patient’s and family’s cultural norms about vaccines, provides holistic care. There is a wide variety of attitudes and beliefs about vaccines, many of which are fueled by misinformation. A recent publication by Marcus also includes common vaccine misinformation and pre-scripted nurse responses, with links to supporting scientific evidence that can serve as educational resources and tools for emergency nursing practice. The emergency nurse can also consider obtaining more detailed information about past vaccine experiences and reactions, and prepare to share scientific information about the differences between reactions to the vaccine itself, to the vaccination procedure or a vaccination error, and other coincidental reactions that are unlikely to be due to the vaccine. The emergency clinician can also personalize education by guiding the patient through the differences in minor and severe vaccine reactions, as well as the pathophysiology of the likely underlying cause for the patient’s past experience with adverse events.

The third and broadest level of the vaccine hesitancy framework is context, which is depicted in the top row of the Figure. A key example of the influence of context can be found in the 2019 measles outbreak in the US, where most of those infected belonged to a social network among the Orthodox Jewish community. The social network, trusted gatekeepers, and intersectionality of identities contributed to the views about vaccines and vaccine status in this outbreak. Similarly, the political process in regions where the policy on compulsory vaccination is up for debate can become an area where patients and families receive conflicting information from people they trust or who have concerns with which they identify. In many instances, the emergency nurse is situated in their own geographic, faith, recreational, and other communities to be a trusted source of information about vaccines. Emergency nurses are also frontline witnesses to the tragedies of vaccine-preventable illnesses. Similarly, nurses are underrepresented in the media, and emergency nurses’ knowledge and experience in caring for patients with vaccine-preventable illness are key, and underused, resources in large-scale strategies in public education to overcome vaccine hesitancy. In the policy arena, childhood vaccinations are often required for children to attend public schools, for occupational workers to continue in their jobs, and for older adults to obtain day care or remain in some care facilities. Despite the widespread public health benefits of vaccination, there are few to no laws or regulations about what is required to be ingested, inhaled, or injected into one’s own or one’s child’s body in Western cultures; this can create a cognitive dissonance or unexamined sense of a violation of individual rights or cultural norms. In my own practice experience, there were several instances where we identified that compulsory vaccination was a traumatic trigger associated with the parent’s or patient’s childhood trauma or other major adverse life experience that involved a loss of control. The effectiveness of the emergency nurse’s patient education can be enhanced, in these instances, by basing communication and information on the principles of a trauma-informed approach. Many patients are vaguely aware of historic vaccine safety problems, which may lead to vaccine hesitancy and mistrust. The Centers for Disease Control and Prevention publishes clear and concise information about historical vaccine safety concerns on its website. It is important that this information is not oversimplified or withheld from patients to continue to build a trusting clinician-patient relationship about vaccine...
hesitancy. The emergency nurse can use this information about historical safety concerns to validate the patient’s own concerns, contextualize the information, and minimize existing fears or concerns about unaddressed or ongoing problems in a fact- and evidence-based but nonjudgmental approach about the processes and approvals linked to vaccine safety. If the nurse assesses that geographic factors are a barrier to vaccine attainment, updated lists of referrals and information sources about mass vaccine outreach schedules or incorporating seasonal vaccines into the ED workflow may be considered. Last, and an area ripe for nursing policy interventions, are pharmaceutical industry influences. Information about vaccine manufacturers, competing incentives, overall profits, profit from vaccine product lines, inspections, safety violations, and regulatory actions or sanctions should be easily and transparently disclosed to the public. For example, in the late 1990s and early 2000s, the US military was vaccinating members deploying to high-risk environments for anthrax. The vaccine supply was limited owing to multiple safety violations and a federal drug administration suspension. A full and transparent understanding of the competing interests, financial incentives, and safety profile for each vaccine and vaccine manufacturer is not currently readily accessible for patients and health care professionals to logically address all elements of vaccine hesitancy in evidence-based information (Figure).

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Health Care Professional Basic Vaccination Education Refreshers and Resources

The most common vaccinations given in the emergency department are the Tdap (tetanus, diphtheria, and acellular pertussis) and Td (tetanus and diphtheria) boosters. Emergency nurses are also in an influential position to counsel patients and families on the importance of the full range of adult and childhood vaccinations, particularly for family members and household contacts of a patient with a diagnosed vaccine-preventable disease in the emergency department. The expert emergency nurse is prepared to answer questions and provide information on immune system function, types of vaccines (live attenuated, inactivated, subunit, and toxoid), vaccine components (including adjuvants and preservatives), vaccination routes, schedules, adverse events (frequency and severity), and processes to assure safety. The Table provides a list of freely available resources and links for health professional education and resources on vaccines. Most interventions that have been evaluated through research focus on raising the knowledge and awareness of individuals or groups, but the actual vaccination or vaccination rate must be included as the primary outcome of interest to demonstrate efficacy and effectiveness in future research.

In conclusion, this editorial provides an introduction to the collection of infectious disease manuscripts in this issue of *JEN*, presents an overview of the vaccine hesitancy framework, and includes clinical resources for ongoing health professional education on vaccines. The COVID-19 pandemic crisis has illuminated the essential role of emergency care in the prevention of, and response to, infectious diseases. We, the editorial team, are honored to continue to support the specialty’s advancement and excellence with the work disseminated in *JEN*.

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Appendix

Infection Prevention and Control

Susceptible host
A person who is potentially vulnerable to an infection

Infectious agents
Pathogenic (disease-causing) microbes such as bacteria, parasites, viruses, or fungi

Portal of entry
Site through which a pathogen can enter the susceptible host and cause infection, such as a urinary catheter or central line

Reservoirs
Hosts or habitats - such as humans, animals, or environment - where infectious agents live and reproduce

Mode of transportation
Method or route an organism transfers from a reservoir to a susceptible host. Can be directly by touch or aerosolized droplets, or indirectly by contact with contaminated surfaces or intermediate vectors.

Portal of exit
Route infectious agents leave the reservoir. Can be via nose or mouth, urinary tract, or in blood or other bodily fluids.

Ways emergency nurses can break the chain of infection:
- Advocate for immunizations
- Use appropriate isolation precautions
- Perform correct hand hygiene before and after patient contact
- Assess patient travel and potential exposure history
- Use proper personal protective equipment (PPE)
- Participate in nurse-driven removal of urinary catheters
- Clean contaminated objects with appropriate disinfection and sterilization products
- Properly dispose soiled materials in appropriate receptacles
- Participate in antimicrobial stewardship
- Educate patients on infection prevention

REFERENCES:

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